

that in the *Scaurus tristis* lineage 11 taxa among 24 (46 %) strictly inhabit subdesertic and desertic areas, whereas in the *Scaurus punctatus* lineage only 2 species among 13 (16 %) inhabit areas with comparable bioclimate. On the contrary, in the *Scaurus punctatus* lineage 10 taxa among 13 (76 %) strictly inhabit areas with mediterranean bioclimate, whereas in the *Scaurus tristis* lineage 10 taxa among 24 (41 %) inhabit similar areas.

Concerning the altitudinal distribution of the taxa of the genus *Scaurus*, only 3 among 38 taxa can be found at high altitude (>2000 m): namely *Scaurus mairei* Peyerimhoff (Hoggar), *S. alticola* Escalera and *S. kocheri* Peyerimhoff (High-Atlas, Marocco). Thus, the large majority of taxa (33=87 %) live at low altitude from 0-1000 m. If considering the two dif-

ferent lineages defined above we find in the *Scaurus uncinus* lineage 7 species among the 11 ranging from 0-1000 m can be found at an upper altitude which is 63.6 %. In the *Scaurus tristis* lineage the situation is quite different: only 4 species among 21 ranging from 0-1000 m can be found at an upper altitude which is only 19 %.

In conclusion we can state that in the genus *Scaurus* the number of endemic taxa is very high (60 %), but very few species (6) possess a very large distribution. Most taxa live at low or medium altitudes in areas of mediterranean bioclimate. Very few species (3) only have been found at high altitude.

This work has been done at the Laboratoire de Zoogéographie, Université Montpellier III, BP 5043, F-34032 Montpellier cedex 1.

A tenebrionid society in southeastern Kazakhstan: composition, zoogeography and ecology

(Insecta, Coleoptera, Tenebrionidae)

Wolfgang Schawaller

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Species composition of Tenebrionidae at a river bed with dense gallery forest in Kazakhstan is enumerated and the ecological and biogeographical conditions are discussed. No tenebrionid was found in the forest which is ascribed to rather recent origin of the forest which prevented forest-dwelling species to immigrate.

Dr. Wolfgang Schawaller, Staatliches Museum für Naturkunde, Rosenstein 1, D-70191 Stuttgart, Gemany; e-mail: schawaller.smns@naturkundemuseum-bw.de

Locality of study

Southeastern Kazakhstan, Charyn Canyon W Chundzha, 650 m, 43°37'N, 79°21'E, 10.-13.VI.1993 & 29.-31.V.2001. The Charyn river as a tributary of the river Ili comes from the Tien Shan mountains and has washed out an up to 20 metres deep canyon in the adjacent flat semidesert area. A sharp ecological contrast exists here: a quite humid forest as a river gallery and a quite dry belt of loamy soil. The level of the ground water is high, so the soil within this canyon is partly salty. The dense forest consists mainly of *Fraxinus*, *Populus* and *Salix* trees, and is often flooded, in daily as well as in seasonal intervals, depending from the weather and snow conditions in the upperstream mountains. In contrary, the loam belt is quite open, only a few bushes, mainly tamarisks and *Haloxylon* are growing here.

Composition of fauna

27 species of Tenebrionidae have been recorded (all leg. and det. W. Schawaller, material in Museum Stuttgart). The faunal composition concerning subfamilies is: Lagriinae (7 %), Pimeliinae (45 %), Tenebrioninae (37 %), Alleculinae (7 %), Diaperinae (4 %), Coelometopinae (0 %).

Belopini: *Belopus calcaroides* Reitter, 1920, *Belopus filiformis* (Motschulsky, 1872);

Tentyriini: *Anatolica lata* (Steven, 1829), *Anatolica subquadrata* Tauscher, 1812, *Microdera iliensis* Skopin, 1961, *Microdera tscharynensis* Kaszab, 1966, *Scythis affinis* Ballion, 1878, *Tentyria acuticollis* Reitter, 1900;

Adesmiini: *Adesmia panderi* Fischer von Waldheim, 1835;

Stenosini: *Dichillus pusillus* (Ménétriés, 1849);
 Akidini: *Cyphogenia gibba* (Fischer von Waldheim, 1821);
 Pimeliini: *Ocnera lepidacantha* Fischer von Waldheim, 1830, *Pimelia cephalotes* Pallas, 1781;
 Boromorphini: *Boromorphus opaculus* Reitter, 1887;
 Blaptini: *Blaps deplanata* Ménétriés, 1832, *Blaps granulata* Gebler, 1825, unidentified *Blaps* species, *Prosodes rugulosa* Gebler, 1841;
 Platyscelidini: *Oodescelis clavipes* Kaszab, 1938;
 Opatrini: *Cheirodes dentipes* (Ballion, 1878), *Dilamus gnom* Skopin, 1961, *Lobodera rufescens* (Mulsant & Rey, 1859), *Pachypterus serrulatus* (Reitter, 1904);
 Helopini: Unknown species of unknown genus;
 Alleculinae (2 tribes): Unidentified species of *Omo-phlus*, *Steneryx dejciani* Faldermann, 1836;
 Crypticini: *Crypticus latiusculus* (Ménétriés, 1849);
 Coelometopinae (2 tribes): No record.

Zoogeography

The species have been sorted in 5 distributional groups, from a wider transpalaeartic distribution (Europe, all Siberia, West Caspian and Central Asia) up to endemic species in southeastern Kazakhstan. Within these distributional groups, the tenebrionid tribes are represented quite differently. In the group II with a wider distributional pattern (West Caspian, South Russia, Central Asia, Iran, Afghanistan) species of Opatrini represent 49% and of Tentyriini 0% of the fauna, in the group IV with smaller areas (Central Asia, Mongolia, Xinjiang) species of Opatrini represent only 10% and of Tentyriini 40%; in the group V (endemics) Tentyriini represent 100%. In other words: Tentyriini obviously show a higher rate of speciation in the investigated area than the other recorded tribes of Tenebrionidae.

Ecology

Shifting sand and consequently psammophilous species are missing in the Charyn canyon, whereas only 50 km away in the sand dunes of the Ili river sand-adapted species (*Trichosphaena*, *Lachnodactylus*, *Leichenum*, *Psammestus*) are not rare. The soil of the canyon is loamy and quite compact, at least in dry condition, thus the sand digging species with a smaller body size are unable to exist. Also missing in the Charyn canyon are quite common species from adjacent *Artemisia* steppe habitats (*Podhomala*, *Pterocoma*, *Trigonoscelis*, *Earophanta*, *Platyscelis*). Probably these species need a denser vegetation occurring in the *Artemisia* steppe but not at the Charyn. It is striking, that these species mostly from the subfamily Pimeliinae have a bigger body size, probably the food resources are too low in the open Charyn habitats for additional big species. All 27 tenebrionid species occur in the open loamy belt and not a single tenebrionid species (for example from the genera *Diaclina*, *Eledona*, *Ulloma*, *Platydema*, *Corticus*, *Scaphidema*) has been found in the dense forest, although old and dead trees and a lot of fungi as usual biotopes for tenebrionids occur. Probably we face here old trees, but not an old forest with an age of only 500-1000 years. Before that time, the canyon was filled by water up to the slopes. Then, in connection with the known desertification in historical times the water sunk and the forest developed by seeds from the upperstream mountains. But the forest fauna from the mountains could not reach this place because of its absolute isolation by huge semidesert surroundings.

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